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Farrands, Chris

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SECURITIZATION DEBATES: BRINGING THE POLITICAL ECONOMY BACK IN? THE CASE OF LITHIUM BATTERY TECHNOLOGY AND ENERGY SECURITY

CHRIS FARRANDS

Abstract

This paper aims to introduce and test the core theoretical idea of double securitisation and of the need to bring political economy back into discussions of (at least some) security agendas. It also argues the importance of technology and technological change in shaping, and potentially in undermining, security agendas. It identifies a case for exploring questions of security and securitization in parallel with a political economy enquiry in at least some cases, the versions of securitization which engage with both with discourse and speech acts and with markets and complex actor relationships through markets.

Keywords: international relations, political economy, securitization, intelligence studies, competitive intelligence, environmental security, security agendas, institutional economics.

Introduction

There are many panicking grand narratives about energy security. 'Europe is under threat from Russia's energy domination'; 'the world system is running out of energy'; 'the United States must buy biomass energy from its farmers because foreign suppliers cannot be trusted'; 'the rush to bioethanol is trying to solve the energy insecurity problem at the expense of food security'; 'the West can no longer afford the energy it needs unless it makes radical cuts in its national income': these are just some of the generalised arguments that float in the air on the subject, often not tied to any very specific evidence. There is thus a story that energy insecurity is a particular kind of threat which demands an immediate response –the grand narrative of danger or uncertainty is capable of being replaced or restored by one of salvation. Usually, this salvation is to be achieved at the hands of politicians once they wield the 'right' policies. Every politician wants to be Beowulf slaying dragons; none want to be the second spear carrier, slaughtered or surviving almost unnoticed in the margins of the narrative. And we might agree that energy insecurity is indeed a particular discourse, and that it does indeed invoke social practices way beyond

mere ‘theory’, as well as the social construction of conceptions of risk, danger and uncertainty (DILLON, 2000). But this is a distorted and partial narrative. It is also *not* a hegemonic discourse; rather, it is a set of highly contested discourses which contradict much of what passes for common sense within a more technically focussed knowledge community (MÜLLER-KRAENNER, 2007). For the management of energy security does not lie primarily with politicians at all. Nor has it in any of the various ‘energy crises’ of the last sixty years (I trace these issues back in a Eurocentric manner to the crisis of oil prices and supply which followed the Suez crisis of 1956, the first peacetime energy crisis of the late modern state / economy).

Instead, one might argue that the management of energy security lies primarily with a complex variety of corporate actors and innovators and engineers. Firms –major energy companies- managed the oil crisis of 1973-4 as well as the ensuing ‘crisis of low prices’ in the 1980s, as Louis Turner, among others, demonstrated at the time (TURNER, 1976). They also managed the decline in North Sea gas, changing Japanese energy demand and the rising energy demands of the new major actors in world politics, Brazil, India, China, Indonesia and others. Firms are making the decisions which shape energy security and insecurity today, although one might note that their decisions over the last decade have pretty much pre-determined how energy insecurity is managed right now, and that their decisions now will have significant effects into the 2020s or 2030s. This is because the lead times on investment decisions and technical innovations are that long. If we want to use the language of discourse analysis here, one might say that firms and markets have very different discourses and very different mechanisms for changing the discourse from those of more public diplomacy (KNUTSEN, 2002; WILLIAMS, 2003). There is then a ‘clash of interpretations’ (RICOEUR, 1974) as well as a clash of discursive formations. Energy security is not managed by political leaderships or political institutions, although they certainly can have some influence on energy policy outcomes. In this paper I want to explore more fully the process whereby energy security and insecurity become defined, how they are politicised, and how the distinctive status of being politicised and the intensity of argument and practice which then surrounds them play out in a particular case where technology and innovation are important factors, the case of lithium ion batteries. How can we understand securitisation where the forces and structures of a political economy context are fundamental as opposed to military threats or the direct undermining of shared identities or institutions?

The fact that the management of actual energy problems lies with oligopolistic companies might be interesting but irrelevant, *if* the public discourse of fear and insecurity is nonetheless determined by other agents and other voices. But I would argue – and I would hope to show in this paper – that while other agents and voices do indeed have some influence on energy

securitization, including both media and political actors, they do not determine it, and they cannot do so. There are different levels of public discourse on energy insecurity (HELM, 2007), but the influence of outcomes in the global political economy of energy is not primarily shaped by the more noisy of those levels, not least because the lead times for the change or investment in energy futures is longer than public concentration by a very considerable distance, but also because the debate on securitization which shape discursive practice, and are in turn shaped by it, are intra-institutional rather than public arguments. The complexity of these debates and processes shapes the politics of anxiety which surrounds them.

The underlying question in this paper is to ask how this contradiction in debates about security and insecurity might be managed so as to develop the toolbox of practical analysis of critical security studies. The case study, however, serves to illustrate some of the points the theoretical debate raises rather than to offer very firm answers. At this point it might also be asked how 'critical security studies' can be practical at all. If, as writers such as Ken Booth (2005) and Karen Fierke (2007) have suggested, the main purpose of critical security studies is to be critical, which is to say to build on a critical theoretical perspective on security, then perhaps one cannot at the same time offer practical proposals or engage with a practical world at all? This argument follows a basic axiom elaborated by Robert Cox (and widely misunderstood) in his influential early articles on uses of Gramscian theory in international political economy: because 'theory is always and in all circumstances for someone and for something', it must necessarily be either critical or practical in its impact (COX, 1981; see also COX and SCHECHTER, 2002). This argument seems to me to be old cheese. It is not difficult to suggest how critical arguments, so long as they are rooted in a critically grounded position, can also have practical effects in terms of the promotion of justice or emancipatory movement in the world system (FARRANDS, 2001; FARRANDS and WORTH, 2002; TAUREK, 2006).

The argument here is that energy insecurity is met, if it is met at all, by the collective decisions of a range of firms (ISOARD and SORIA, 2001; HELM, 2007; BAKER, 2008; FARRANDS, 2009) rather than by political leadership or government investment – *and* that 'securitization theory' needs to address the range of actors actually involved in the management of energy security/insecurity more carefully (see also Balzacq, 2005). Even thought some governments spend what looks like quite large sums on investment in energy infrastructure and reserve capacity, that spending is a small fraction of the investment of corporations. But the firms involved in energy technologies are almost always a small identifiable group of key players – just as oil gas and electricity are produced and sold by a small number of large oligopolies, so the leading technology producers at any one time form a small club of dominant actors with very considerable oligopoly powers. Those oligopolies are

reinforced both by financial barriers to entry in the markets in which they operate and by intellectual property barriers to entry – the large firms have the knowledge power to stay ahead of a pack of smaller firms which are chasing them, and which keep them on their toes even though they have little prospect of catching up (ATHREYE and CANTWELL, 2007). To understand energy insecurity and its management, one has to understand oligopoly (or monopoly) competition. One also needs to understand the crucial role taken in such markets by forms and structures of regulation, which is where governments and international organisations clearly do have roles (BOYER and SAILLARD, 2001). This is often highly technical and the field of official management – not where government (politicians) meets business, but where business bureaucracies (including often important trade associations and lobby groups as well as large firms) meet government bureaucracy (in the form of civil servants with the expertise to match that of the firms). Cerny (2010) has recently explored the impact of complexity on government structures in a powerful account of the reorganisation of the state-economy relationship under conditions of complexity and insecurity, and this paper accepts his analysis as a starting point for its own interpretation.

Political Economy *vs* Securitization Theory?

Balzacq (2005; 2010) has criticised what he calls the 'speech act' centeredness of securitization theory in the early 2000s. he suggests that not everything which makes sense of security dilemmas derives from different forms of utterances, with their illocutionary and perlocutionary force (see also ALKER, 2006). The author stands in an ambiguous relationship to this argument, since uses of language, and in particular ideas of language use as constitutive of social life derived from the work of Austin, Searle and Wittgenstein, has been important in much of his own work. I do not aim to disown this work here (see FARRANDS and MOORE, 2010). But I do recognise the value of the argument which Balzacq and his colleague's advance that a focus on speech acts alone misses a part of the point of how securitisation and insecurity are constructed socially, and this is a theoretical starting point for an enquiry which looks beyond speech act theory in understanding security issues.

In political economy, securitization can often mean something quite different. Securitization is the taking of uncertainty and reformulating it as risk so that it can be discounted or bought and sold as a form of investment in a market. This may take at least two forms. One might simply insure against a given risk. That does not prevent the possible problem arising, but it does allow for some form of compensation (not always the full amount) if a given eventuality occurs. So we can insure a shipload of oil against piracy as we can insure our wedding day against rain. But what is important here is the secondary

market. Our ability to insure depends on our insurers ability to reinsure in a wholesale market. And in that wholesale market, risks may be bundled together or sold singly onwards to investors who are speculators in risk. Here 'security' becomes 'securitisation' through the issue of 'securities' in a particular literal form. The 'security' here is a piece of paper which represents the value of our risk over a given period of time into the future. Where risks can be more easily priced, they can a lower premium; where risks are more uncertain, including where they are over a longer time period, they carry a higher premium, and perhaps more exclusions as well. Security in the former sense becomes security in this second political economy sense when markets set about discounting the future risks of present uncertainties. This happens in a range of political economy products which are important, and where conditions apply which are, I would argue, quite different from other kinds of securitization. My aim is to try to pin down what those differences are and what their implications might be. The fields this covers include food security, since food prices are largely set by futures markets, which also determine how farmers and the seed and fertilizer suppliers and supermarket customers invest and commit themselves to future planting. It also covers some important kinds of environmental risk, most obviously those associated with carbon capture and storage technologies, but more generally those areas of environmental risk which have been marketised in some form in the last decade or so. And it includes every aspect of energy security one can identify, from futures markets in gas and oil to investment in infrastructure, and from investment in new capacity in renewable or low carbon energy to the sale or control of intellectual property vital to innovation in the field. Each of these fields – food, environment and energy – has its own investment led time scales as well as its own. Each has its own innovative technologies and leading firms. Each is also subject to a fair amount of government regulation and government intervention, not excluding subsidies. But in the following section, the suggestion of an opposition between political economy and security studies is rejected; instead, it si proposed to consider both in parallel as factors in the two different kinds of securitisation which already emerge from the current literature as well as from contemporary practice.

The Political Economy of Security in Practice? Double Securitisation?

Security is arguably unachievable; the original security dilemma outlined in classical realist literature, rooted especially in Hobbes' political psychology, suggested that the more individuals or states try to achieve security the less able they are to realise it. Krause and Williams (1997 offer a challenge to this more traditional image of how insecurity is constructed, but without seriously challenging the broadly pessimistic assumption of realist theory that 'security'

is a difficult goal rather than an attainable condition in international relations. Insecurity, risk and anxiety have roots in human fears about the nature of present dangers but also possible future possibilities which a rationalist or liberal assumption of progress and order cannot assuage. Classical realist, constructivist and critical accounts of security recognise the difficulty, if not the impossibility of security except as a dangerous illusion. Risk is therefore something which all human societies live with. But this notion of risk has been incorporated into critical security studies in a more specific form drawing on Ulrich Beck's work (1992). For as Beck (and others) have suggested, late modern or advanced industrial societies have specific technologies of risk and danger, because their management of risk is widely discussed within public space, but also because their management of risk is mediated through bureaucratic structures and procedures. Risk society is in some senses global, a part of globalization, Beck has argued; but the detailed management of those risks and the ways in which they are 'sold' to ordinary citizens is not something which public authorities, either at a state or at a regional or global level, can hold entirely to themselves. Governments can intervene to regulate food prices by intervening in futures markets for staple foodstuffs; or by changing subsidy regimes for cash crops; or by changing subsidies to ensure that land committed to the production of bioethanol is returned to the production of grain. Given that these markets are social constructions and not 'natural', something which even Adam Smith agreed with (Smith held that without some management of markets, producers or buyers, or both, would get together to ensure a monopoly or monopsony regime), it is not impossible to see how they might be re-constructed to achieve particular security goals. Beck's arguments suggest that security is an impossible goal, and that what matters is the distinctive methods, technologies and structures which societies have for managing insecurity and the degree to which those are open to democratic accountability.

The management of insecurity through market mechanisms is common enough. But as has already been suggested, it generally operates beneath the political radar. It is not part of public space and the public have only limited access to it, partly because of its complexity and partly because of what is described as commercial sensitivity. It is in any case a technical process for the most part, something which, if it appears in the news at all, is relegated mostly to the back pages of business news. But it is still central to the question of security in energy, food and other domains, and Foucauldian scholars are right to remind one that the technical detail is often the most important place within which political power resides in complex social; systems (DILLON, 2000).

The price of energy in particular reflects an assessment of the risks associated with its future price and future supply. This is the case very simply because nearly all wholesale energy trading involves future contracts, often for the long term, in gas, coal, electricity as well as oil and petroleum. These prices

provide an insurance against future shortages of specific grades of energy products delivered on particular dates. They securitise these products. In parallel, future energy contracts are bought and sold on – oil or liquid natural gas (LNG) at sea may change hands many times in transit. This is long established in oil products; it is very recent – less than two years old- in LNG markets. In this trading, energy products, or more accurately the contracts to secure them, become securities in the same sense that treasury bills or corporate bonds are securities. They are sold on or held within the conventions of a speculative market. Furthermore, energy users may also seek to insure directly against the cutting of energy supplies through insurance firms. Indeed, some power utilities are required to insure against loss of supply by shareholders anxious to be covered against power outages. Energy products are securitised in very specific ways which, for the most part, consumers are unaware of; yet these are the price mechanisms which actually set the availability and price of energy, rather than the pure interplay of supply and demand.

What does this amount to? Energy markets are operating under conditions of what can be called 'double securitisation'. This is a new formulation of the idea of energy security and the main claim of originality in this paper. On the one hand, securitisation is a consequence of the interaction of discourse and social practice as described by Balzacq, Dillon and others (cited above). It is a process of social construction shaped by interests, identities, values and anxieties as well as by the social technologies (using this term in a Foucauldian sense) of daily practice in the exercise of power. On the other hand, energy security and insecurity are the outcomes of processes in the market where the actual supply or demand for energy are not shaping either prices or volumes sold so much as the anticipated risks of future supply and demand. Many energy contracts are for two years ahead, especially in gas markets, which have always been characterised by long term contracts, and some futures contracts are for even longer periods. Firms buy short term energy when their planning has failed, and the cost of short term energy contracts is significantly higher than the average of long term contracts in all energy fields.

These two processes of securitisation cannot, at a theoretical level, be collapsed one into the other. The first, Foucauldian, understanding of the ways in which securitisation and desecuritisation are constituted claims to stand as an all-encompassing account of a set of speech acts, discursive structures and practices and the production of power relations. The second account neither defeats the first, nor is reducible into it (although some Foucauldian scholars might claim that it can be). It is a reflection of a distinctive set of concerns. It brings political economy 'back in' to the discussion of security: markets, structure, risks and the anticipation of risks and the ways in which these are priced, often through arcane financial instruments, have a logic of their own. These two forms of securitisation both matter in shaping energy security, as they do in shaping other agendas of

security (food, carbon pricing, forestry, fishing rights and so on). In all of these cases, a 'common sense' account which explains energy security issues in terms of simple market interactions (supply and demand) misses the point, and in all of these cases, it can be argued firmly that while market failure may occur (has quite often occurred) market failure alone does not provide an understanding of the ways in which energy insecurity is brought about, and therefore of how it might more effectively be addressed. Double securitisation is a key to understanding the more complex nexus of issues involved in energy security and desecuritisation. A critical security studies approach to understanding energy security opens a more sophisticated way to understand how and why energy security is both difficult and apparently less rational than either liberal theories of security and cooperative risk bearing or free market theories of effective competition leading to the satisfaction of consumer demand.

In arguing this case, it might be accepted that this is a summary of the argument and that it might be presented at much greater length. But all of the key elements are here. The focus needs to shift towards an understanding of the political economy of energy security and not simply towards the construction of insecurity argued by a Foucauldian analysis. While the Foucauldian analysis is an essential part of the picture, it is not the whole picture and cannot replace an understanding of political economy processes meaning among other things the ways in which future risk in energy supply is arbitraged by a number of actors in complex patterns.

In the following case, I want to explore these dilemmas in more detail. But the lithium battery case is also important in its own right for reasons to be explained.

The Lithium Battery Case

Lithium battery technology (LBT) picks up on the political economy questions which the paper has started to raise in the previous section; and it is important as an issue in the development of discourse of insecurity. But it is also inextricably involved with some issues of the development and diffusion of innovations, and of the barriers to that development and diffusion (FARRANDS, 1997). This is in itself significant, since the dimension of technological innovation is often (usually?) neglected in debates about security and insecurity (exceptions include ISOARD and SORIA, 2001, and PASCUAL and ELKIND, 2010). It is not necessary to be reductive, to argue that there is a simple 'technological fix', to make the point that discussion of many security agendas without taking notice of the positive *and* negative effects of technological change is poor argument. This paper never suggests that there is a technological fix which can with one leap get any economy out of the difficulties of energy insecurity. But it is, while not a sufficient basis for a

solution, an essential element in the management of security as well as the definition of the sources of insecurity. The securitisation through markets, technical innovation and risk arbitrage is distinctive from that which takes place through speech acts and discursive formation, and each needs to be given a place in a fuller and more complex account. The complexity of trying to think it through serves as a reminder that pronouncements about the macro-level of security issues, although it may also have some strengths, is inadequate or, at the least, insufficient.

Lithium battery technologies remain a very important part of the vision for a low carbon future and at the same time remain an important strategic field of competition both for major firms and for governments (HORIBA, T., MAESHIMA, T., MATSUMURA, T., KOSEKI, M., ARAI, J. and MURANAKA, Y., 2005; NAZRI, G-A. and PISTOIA, G., 2009; SCROSATI, B. and GARCHE, J., 2010). Like many high technology innovative business sectors, LBT is dominated by a small number of actors: twelve firms have almost all the market, some producing batteries primarily for mobile phones, others producing primarily for computer and related applications. Together, the sector accounts for roughly $14bn, and has been growing at 7-10% per year during the past 4 years (despite the impact of crisis and recession) (Pike Research, 2010). However the sector will be further transformed to the extent that lithium batteries can be effectively scaled up to supply power for transport applications, including not only electric cars but also delivery vehicles, buses and possibly tram systems. But this places challenges in terms of materials and chemistry which are not yet properly solved, and which involve difficult problems not only of new materials but of the management of the behaviour of electricity through those material. In both areas, the solutions are being sought at a nanotechnology level. To simplify the core issues here, increased energy security is a function of the rate at which effective scaling up can be achieved, diffused and brought to market (SCROSATI and GARCHE, 2010). I will come back to the debate about whether lithium battery technologies might really contribute to energy security later in this paper.

The problem of electrical storage raises questions about materials. The technical difficulty is partly finding materials which allow effective storage; it is also a problem of allowing effective release of electricity in a controlled way. An uncontrolled release either amounts to a form of explosion or releases sufficient heat to cause a fire (or both). These difficulties can arise with smaller lithium batteries, where either cellphones or laptop computers have seemed to spontaneously combust: what was apparently a random occurrence was in fact a failure of the battery. This can be dangerous in the best of situations; on a plane journey or in other enclosed spaces it can be more than serious. Scaling up the battery makes this kind of problem much more likely to happen unless specific measures can be taken to prevent it, and given that many millions of batteries of

any given technology or materials will be produced if it is successful, even a very low percentage failure rate may produce an unacceptable risk of problems.

Asian Actors, World Insecurity?

One important development in the discussion of energy security in general, and energy storage technologies in particular, is the concern of a wide variety of actors with increasing Asian dominance of the key technologies, including innovations in lithium ion battery production. This reflects the leading role of Japanese and Korean firms in the production of existing lithium batteries and the emerging Chinese challenge in these technologies, which is also reflected in a very considerable wave of patenting activity in li-ion knowledge production (BAKER, 2008; LIU and BUCK, 2007). This is one of the points where the discourse and the political economy engage with each other. Furthermore, a strong body of research suggests that in emerging technologies, existing knowledge and skill advantages coupled with size economies mean that as technologies change existing producers have strong advantages in future innovation development. While it may be the case that some existing producers lose leadership, the future leadership is drawn from among those existing producers, and new entrants have relatively limited opportunities in practice to size a dominant market share, regardless of their theoretical potential to do so (ATHREYE, S. and CANTWELL, J., 2007; KRUYT *et al*, 2009). Although one might not want to take this work as absolutely definitive across all sectors, it indicates that the patterns of competition in this emerging technology are already in effect laid down for the 2030s. As global demand for lithium ion batteries grows, and as the capacity of batteries for greater charge loads and longer lasting performance increases, the major suppliers are likely to be Asian, with the major change being the emergence of leading Chinese producers alongside the major Japanese and Korean firms (DAIM and JORDAN, 2008) . This impression is reinforced by the quantity of lithium ion patenting now originating either from Chinese research centres or from Chinese researchers who are nationals working in laboratories outside China (LIU and BUCK, 2007; Research in China, 2010; HORIBA *et al*, 2005; Pike Research, 2010). The global market is not shifting towards major Asian producers; it has been constituted by them, and remains very much contended between a small number (roughly ten) of powerful producers which are also doing much of the innovative research (Pike Research, 2010). These are the firms which hold first entrant advantages, including owning many of the key patents, a fact which has only very recently been seen as a matter of concern by some western political interests although it has been a subject of business concern for a decade.

As just noted, this innovative research capacity gives a particular advantage to existing large firms because of intellectual property domination, especially in a stage of the product life cycle where the lifetime of patents is much longer than that of the likely usefulness of the knowledge (since the technology is moving quickly through the life cycle). But the key advantages held by existing producers are not so much concerned with knowledge and intellectual property – although they are very important – as in process advantages. The business is not about producing a lithium ion battery efficiently. It is about producing large volumes of batteries efficiently and to a recognised high quality standard so that OEMs (original equipment manufacturers) can adopt those particular systems in their designs. The producers of mobile phones or laptops or electric vehicles are the primary customers for batteries, ***not*** the general public. And those OEMs have a very great deal of knowledge and access to technical data. They ruthlessly design their systems for the most effective and reliable batteries with the longest life and the best safety record, because customers (the 'ordinary public') will not differentiate very carefully between the battery and the machine it is driving –if the battery supplying power to a laptop fails and bursts into flame, the user is more than likely to complain 'that laptop blew up' and, fi they have a choice, use either the battery nor the laptop in the future. Battery manufacturers therefore have first of all to work in a market which is highly competitive, where, although there are a small number of firms, there is a very high level of knowledge and technical expertise, and where the competition is very touch. Lithium batteries, unlike the batteries you might use to power a torch or a portable radio, are in this sense 'industrial products' rather than 'consumer products'. At some stage this will change, and systems will be designed to take different batteries which the consumer will be able to select for herself. This is inevitable because of the impact of anti-trust legislation and legislation against anti-competitive practices ('abuse of a dominant position') in both the EU and US and other markets. But while the technology is moving quickly and the patent legislation dominates the strategies of producers, dominant positions in the market are not deemed to apply, and the major Asian producers have plenty of time and strategic opportunity to cement their leading role.

To stress the last point, lithium batteries can be sold across the counter as components to consumers, and this creates the impression that this is a 'consumer market'. But the majority of batteries are sold in agreement with original equipment manufacturers (OEMs) –the makers of phones, laptops and so on. The OEMs recommend particular batteries for their individual machines. Sometimes these may be inter-changeable, but generally specific batteries are designed and sold for particular uses and particular designed machines. The consumer merely buys whatever battery is designed and recommended for her machine. Often, a new battery is fitted by the phone shop without discussion. So the real marketing of batteries is between the OEM and the battery

manufacturer, where the battery maker has to persuade the OEM that this particular product designed to these specifications is the best for their equipment. This is a specialised and highly knowledge intensive market in which both the OEM and the LBT supplier have great deal of knowledge of each other's technology and requirements. It is also a dynamic market where, because LBTs are rapidly changing, an OEM might lose out if they recommend a technology which ages too quickly. In this context, OEMs are ordering batteries on long term contracts and taking risks about the quality of the product but also about the speed at which the technology will change.

Conclusions

This paper is a brief foray into a theoretical territory that deserves longer and more careful attention. But it aims to introduce and test the core theoretical idea of double securitisation and of the need to bring political economy back into discussions of (at least some) security agendas. It also argues the importance of technology and technological change in shaping, and potentially in undermining, security agendas. It is perhaps too early to justify any very detailed conclusions. What it has tried to do is to establish a case for exploring questions of security and securitization in parallel with a political economy enquiry in at least some cases, the versions of securitization which engage with both with discourse and speech acts and with markets and complex actor relationships through markets. In these cases, which most obviously include food security and some kinds of environmental security agendas, as well as all aspects of energy security, social practice as it operates within very specific regulatory regimes is an important to outcomes and understanding as discourse and speech acts. The two forms of explanation/interpretation cannot be collapsed into each other. The (stereotypical?) Foucauldian response that 'oh, but surely its *all* discourse' is not only one which is reductive in intellectually inadequate ways; it is also a response which (the later) Foucault would himself have rejected on the grounds of methodological inadequacy. And the neo-liberal response that anything which can be handled by a market can be explained through purely market mechanisms not only defies the realities of the world economy in the last three years; it also defies the important arguments of work in institutional economics (for example that of 2009 Nobel prize winners Oliver Williamson and Elinor Ostrom) and the regulation school of institutional economics (BOYER, LIPIETZ *et al*), on which I draw in this project. The connection between two forms of securitization is not axiomatic – it has to be argued case by case, and it may well be that each case is distinctive. I am not as convinced that the lithium battery case is yet able to tell us as much as the liquid natural gas case. There are several reasons for that. But the lithium battery case suggests quite a lot even so, and that provides at the least a basis for debate.

This argument also stresses the importance of the distinctive characteristics of individual technologies, and the stages they are at in a product life cycle. Lithium ion batteries exist in the market, but they are still at a relatively early stage of development, and their evolution is likely to continue to be rapid by comparison, for example, with the relatively 'old' technologies of wind generation or conventional nuclear and hydro-electric power. This increases the likelihood of greater risk in any future investment or public commitment to some form of LBT. In terms of public policy (which is not the primary focus of this article), this suggests something else. Through diversification of sources of supply and through their greater flexibility, LBTs, like liquid natural gas technologies, may genuinely be able to contribute to a sense of energy security. But LBT growth also concentrates control of the technology in the hands of a small number of oligopolistic actors, and provides a basis for greater market domination against the interests of consumers. Furthermore, LBTs do not produce power; they store it. Their environmental credentials remain in question until we know where the power comes from (how and at what cost it is generated) and what the carbon footprint of the production of future batteries will be. It is perfectly possible that the batteries themselves will be at least adequately efficient to serve long term needs while the chemical and materials processes needed to mass produce them are contributing long term environmental damage which may be compounded by the problem of disposal of old batteries. These are issues to which we do not yet have a clear answer.

The argument here proposes that the debate on securitization / desecuritization is unlikely to be fruitful if it fails to take into account important political economy considerations, not least with respect to the double securitisation of those aspects of insecurity which are both marketised and subject to the core discursive frameworks and practices of broader security debates. This leads the analyst to closer attention to detail – closer than this paper has attempted itself. Big picture arguments about security/insecurity, including those which are well grounded in historical context, are unlikely to be persuasive if they fail also to engage with the detailed structure of both the core actors and the core interactions and processes. As Arnold Wolfers (1962) suggested in a now classic analysis of security issues, it is not the macro level or the micro level analysis that matters, so much as the capacity of analytic approaches to connect the two together in plausible ways.

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